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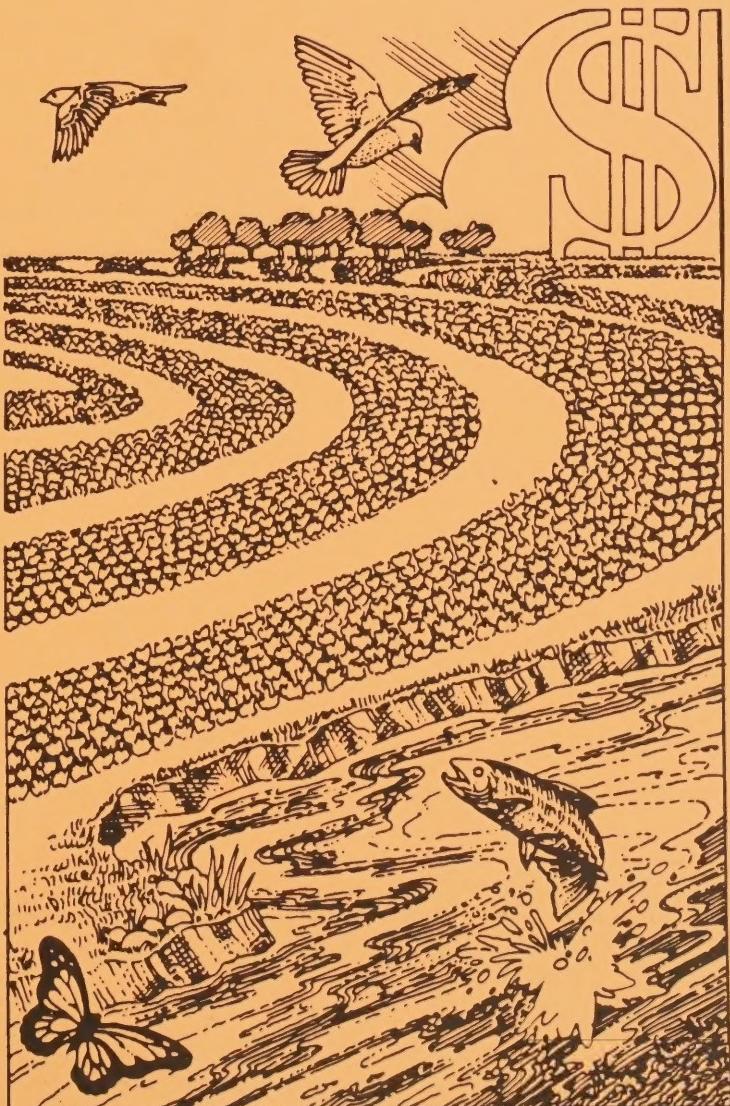
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# ARKANSAS

**Southern Region Projects  
Supported by  
Sustainable Agriculture Research  
and  
Education Program**



United States  
Department of  
Agriculture



National Agricultural Library

Edited by

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from project reports

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## Overview of Arkansas Projects

Congress has provided strong and growing support for the Sustainable Agriculture Research and Education grants program, also known as LISA (Low-Input Sustainable Agriculture). Administered by Cooperative State Research Service (CSRS), with the Cooperative Extension Service as a full partner, this program is forging partnerships between farmers, scientists, educators, agribusiness, non-profit organizations, and government -- a partnership that is beginning to promote better stewardship of the Nation's natural resource base. The program has supported 112 new projects since its inception in 1988; perhaps two dozen more will be funded by June.

Projects funded are typically carried out by teams of farmers, university research and education staff, government agencies, non-profit organizations, and private enterprise. Top priority is given to whole-farm integrated systems projects, usually including on-farm research and demonstrations. These projects are providing scientific documentation of low-input sustainable farming practices and systems, in comparison with conventional or chemical-intensive agriculture.

Farmer involvement is one of the strengths of this program -- 1,860 farmers nationwide have participated in projects during the first three years. When farmers participate in the planning and execution of a project, two important things happen. Concerns of farmers are foremost in the design of the project. And scientists get directly exposed to innovative ideas developed or tried by farmers. These ideas often become an integral part of scientific studies. The result is both better science and a more widespread adoption of more sustainable farming methods that economically sound, socially acceptable, and environmentally harmless, assuring cleaner water and a plentiful supply of safe food for generations to come.

The coordinators of Arkansas projects were asked about participating farmers. Here is what they reported:

- A total of 180 Arkansas farmers have participated in LISA research and education projects;
- 154 are reported to have helped generate ideas for these projects, and 19 help manage the projects;
- 6 farmers have provided land for replicated experiments; another 16 provided land for unreplicated studies, and 10 for demonstration plots;
- 18 are helping with the evaluation of projects.

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## Projects Funded 1988-1991

Seven projects funded by this program that include Arkansas scientists, farmers, or educators in major roles are described here. These projects received a total of \$484,301, and provided \$629,030 matching funds. In most of the projects, a scientist serves as the Project Coordinator. In others, a farmer or other local area residents are contributing to a multi-state project headquartered in another state.

# **Developing and Extending Minimum Input Strategies for Weed Control in Agronomic and Horticultural Crops (LS91-38[53]) [LS88-11]**

## **Summary**

**A** growers advisory panel, consisting of one soybean/cotton and wheat grower and one soybean/vegetable grower have helped with planning, conducting and evaluating the project. This project is a major component of an on-going research program consisting of about 50 studies annually.

Findings of this project show that reduced herbicide programs are both possible and practical with no loss in weed control and crop yield in many locations and crops in Arkansas. Major findings have shown that herbicide inputs can be greatly reduced by substituting mechanical weed control, spraying herbicides in narrow bands, targeting herbicides to most susceptible weed species, and making very early applications.

For example, use of band application and new cultivator equipment have reduced herbicide costs in cotton from \$21 to \$2.30 per acre. Likewise, soybean herbicide costs can be reduced from \$20 to less than \$5 per acre. Survey results indicate that approximately one third of the Arkansas soybean producers have adopted this herbicide-reduction technology, at a cost savings of \$7 million annually. Some of the concepts developed for soybeans are being adapted to other agronomic and horticultural crops in this project, including vegetables. Research in wheat has shown that rates as low as one-fourth the labeled herbicide rates can be used.

Investigators have concluded that further reduction of herbicide inputs can best be accomplished by an integrated program of crop rotation, cover cropping, living mulches and tillage methods such as ridge till.

**Project Coordinator:** Ford L. Baldwin, University of Arkansas Cooperative Extension Service

**Major Participants:** John W. Boyd, University of Arkansas

**Cooperators:** Steele Craig, grower/advisor; Boyce Johnson, grower/advisor.

**Project Duration:** Two years

**Funding:** LISA Funding: \$100,000; Matching Funds: \$109,571

# **Enhancement of the Stability of Southern Region Agroeco Systems through Profitable Transition to Sustainable Agriculture (LS89-15)**

## **Summary**

**C**oopérators from Arkansas, Oklahoma, and Texas including farmers, researchers, and marketing, financial and extension specialists are working on a transitional approach to low-input sustainable agriculture focused on IPM in onions, sweet corn, crucifers and other vegetables in whole farming systems. Informational searches are being undertaken by the Texas Department of Agriculture in collaboration with farmers, Winrock International Institute for Agricultural Development, Kerr Center for Sustainable Agriculture, and Land Grant Universities in respective states. Research cooperators including farmers have been investigating various IPM tactics on small plots and will choose the most promising methods for larger on-farm demonstrations. Critical analysis by farmers help to ensure that the methods selected to lower inputs, sustain soil and other resources and maintain product quality, will also be practical for on-farm application. Inputs have been closely monitored and managed. TDA's marketing staff and Oklahoma State University have been investigating innovative mechanisms of financing LISA farming systems. And information developed in this project is being distributed to producers and consumers.

On the whole, this has been a project with extremely positive results. There have been spin-off benefits which include stimulation of non-vegetable grower interest in LISA, increased communication with other private and public entities which should be involved in LISA, increased networking above and beyond the scope of this project, increased knowledge about farming systems research and extension for some of the individual and organization cooperators, and a probable project in conservation and sustainable community development.

**Project Coordinator:** Paul B. Martin, Texas Department of Agriculture

**Major Participants:** **Arkansas:** F. E. Busby, G. Lee, B. Cartwright, T. Maurer; **Texas:** A. Sparks, Jr.

## **Farmers and Other Practitioners:**

Oklahoma: L. Shanks, Bixby; B. Sears, Talihina;  
B. Constein, Perkins; B. Carter & C. Puckette, Poteau;  
L. D. Roller, Wister; Texas: J. Carlson, LaVilla;  
J. & R. Castilleja, San Juan; A. Scott, Edinburgh;  
Arkansas: S. Fulbright, J. Fulbright

**Project Duration:** 18 Months starting March 1, 1989

**Total Funding:** LISA Funds: \$121,989; Matching Funds: \$67,500

# **Communication and Information System for Low-Input Sustainable Agriculture (LS89-17)**

## **Summary**

This project initiated the development of a communication and information system for low-input sustainable agriculture to serve Arkansas, Oklahoma, and appropriate adjacent areas. The communication and information system will link 18 or more farmer organizations and farmer-supporting institutions, and agencies. It will provide communication and coordination among groups and individuals involved in farming Extension, technical assistance, and research to facilitate (1) transfer of existing and new LISA information to and from farmers and (2) accumulation of reliable and useful new data on LISA methods. Development will include how to prepare, store, link, and access electronic bulletin boards, print media, and databases. The project will evaluate the opportunity for including the entire southern region. This project is contributing to the development of the national project, Sustainable Agriculture Information Network.

**Project Coordinator:** F. E. Busby, Regional Director, Winrock International Institute for Agricultural Development

**Major Participants:** G. Lee, Arkansas; J. Lukens, SFTAC; C. Lamkin, EAPMA; E. Farr, OSFVP; G. Watkins, MC; J. Dickenson, KCSA; T. Maurer, ADFDC; C. King, Rodale Institute; J. Bachmann, Arkansas; P. Martin, Texas

**Project Duration:** 15 Months starting March 1, 1989

**Total Funding:** LISA Funds: \$31,000; Matching Funds: \$92,973

# **Development of a Plan for Implementing a Low-Input Sustainable Forage Production System in the Oklahoma-Arkansas Ozark Highland Region and Similar Land Areas (LS89-19)**

## **Summary**

A grassland conference was held in Salem, Arkansas. About 150 farmers participated in the all day workshop. Noted resource professionals and farmers compared continuous and controlled rotation grazing with steers on fescue and bermuda; gave results of seven year study of grazing systems, animal performance, and profits; discussed matching cows and resources for profit. Two other follow-up conferences were held at different locations in the nine county areas. Approximately 75 farmers attended each of these conferences. Proceedings of the conferences were published and mailed to all persons in attendance. Extra copies were distributed in all nine counties.

In 1989, one of the project's cooperating organizations, Ag Renewal, Inc., donated the use of a bluestem seeder for demonstration and to aid in getting some stands of alternate warm season grass species established for seed production. A field day was held to demonstrate proper seedbed preparation and proper seeding techniques. Later a follow-up field day was held on the same farms to show success of planting, growth, forage and seed production potential. Approximately 450 acres of Caucasian Bluestem, one of our target species, was planted in the project area using these seeders in 1989. As a result of this, two districts, Fulton County and Buffalo River, each purchased a seeder for use by farmers. Since then, over a thousand additional acres have been seeded. Response from land-owners and resource personnel has been very favorable regarding improved management techniques and alternate grass species to lower inputs and production costs, allowing greater economic return while at the same time protecting and enhancing the environment for future generations. Profitable grassland agriculture is sustainable agriculture.

**Project Coordinator:** Mark L. Kennedy, Arkansas Soil Conservation Service

**Major Participants:** **Arkansas:** D. Butts, B. McMurry, D. Richardson, R. Hayden, J. Mitchell, F. Rowlett, L. Farris, T. Riley, F. Busby, J. Bauchman

**Farmers :** Baxter County: J. Rhein, J. Turnbo; Cleburne: B. Hunt, D. Logan; Fulton County: M. L. Humphries, L. McCullough, R. Scribner, F. Oliver, C. Swanson; Independence County: H. Ellison, L. Hamilton, T. Williams; Izard County: M. Dobson; Searcy County: C. E. Tudor, P. Conner; Sharp County: R. Long, P. Rose, C. Wiles, D. Himschoot; Stone County: R. Hayden; Van Buren County: A. Andregg, L. D. Cox, H. Housley

**Project Duration :** 15 Months starting March 1, 1989

**Total Funding :** LISA Funds: \$15,000; Matching Funds: \$38,600

# **A Mid-South Conference on LISA-Related Agroforestry Practices and Policies (LS90-23)**

## **Summary**

**A**groforestry systems offer farmers practical land-use alternatives for marginal agricultural lands beyond high-input agriculture and low-output forestry systems. Agroforestry technologies help farmers diversify production, improve ecological sustainability, and increase economic productivity. Agroforestry concepts and practices need to be encouraged in the mid-South as part of mainstream agricultural practice, research, and extension.

To accomplish this, Winrock International Institute for Agricultural Development convened a 3-day conference in October 1990 on agroforestry practices and policies for the mid-South states. The conference brought together innovative farmers, researchers, and extension personnel from public and private institutions in the mid-South to discuss opportunities and mechanisms for strengthening LISA-related agroforestry strategies by agricultural extension and forestry landowner assistance agencies. Participants shared state-of-the-art agroforestry information and examined policies for encouraging development and adoption of LISA-compatible agroforestry technologies and programs.

The conference also resulted in the establishment of a mid-South Agroforestry Network. The published conference proceedings contained the most current available information on agroforestry technologies, research, and extension activities within the mid-South states. A regional directory of practitioners and researchers in agroforestry and related activities was also prepared. Both the conference proceedings and directory were distributed to participants and to state, federal, and private organizations.

**Project Coordinators :** D. Henderson, F. E. Busby, Winrock International Institute

**Project Duration :** 1 Year (March 1, 1990 to February 28, 1991)

**Total Funding :** LISA Funds: \$18,000; Matching Funds: \$46,495

# **Use of Poultry Litter as a Soil Amendment in Southern Row Crop Agriculture: A Feasibility Study based on Agronomic, Environmental, and Economic Factors (LS91-39[27])**

## **Summary**

Poultry Litter (PL) is a valuable, abundant, but underutilized agronomic resource throughout much of the southeastern U.S. Instead of being used to enhance the productivity of the region's agriculturally important soils, most PL is disposed of on conveniently located pastureland, where frequent heavy applications result in the addition of excessive quantities of nutrients which now threaten local water supplies. Both water quality in the poultry producing regions and prospects for reduced dependence on inorganic fertilizers and sustained agricultural productivity in the row crop regions would improve if PL were to be used as a soil amendment in Southeastern row crop agriculture. The economic feasibility of such a practice has never been examined because the necessary data on crop and environmental responses to this type of PL usage are not available. The proposed study will determine how applications of PL affect crop yields and composition, soil chemical and biological properties, and water quality, and use this data to conduct economic analyses of PL usage in Southeastern row crop agriculture. Cotton, corn, rice, soybeans, and bermudagrass will be amended with either inorganic fertilizer or PL in replicated experiments conducted at eleven sites. Emphasis will be placed on developing profitable, environmentally benign PL management strategies that reduce the need for chemical inputs and improve the long-term productivity of the soil.

**Project Coordinator:** David M. Miller, University of Arkansas, Fayetteville, Arkansas 72701.

**Major Participants :** C. Wesley Wood, Auburn University.

**Other Major Participants:**

N. Slaton, Extension, Area Rice Specialist and Coordinator,  
Rice Research Verification Trial Program, Stuttgart, AR  
T. Lewis, Farmer, Jackson Co., AR  
R. Chlapecka, Staff Chairman, Arkansas CES,  
Jackson Co., AR  
H. Whitley, Farmer, Horton (Blount Co.), AL  
C. Hoomes, County Extension Agent, Blount Co., AL  
J. Yancey, Farmer, Baileyton (Cullman Co.), AL  
G. Hodges, County Extension Agent, Cullman Co., AL  
D. Johnson, Farmer, Fyffee (Dekalb Co.), AL

C. O'Daniel, county Extension Agent, Dekalb Co., AL  
D. Newbern, Farmer, Rogersville (Lauderdale Co.), AL  
R. Hughes, County Extension Agent, Lauderdale Co., AL  
K. Martin, Farmer, Albertville (Marshall Co.), AL  
F. Wood, County Extension Agent, Marshall Co., AL

**Project Duration :** Two years

**Total Funding :** LISA Funds: \$65,312; Matching Funds: \$69,904

# **Utilization of Winter Legume cover Crops for Pest and Fertility Management in Cotton (LS91-40[44])**

## **Summary**

**C**otton is an intensively managed crop, and its profitability is determined in large part by pesticide use and pest damage. The overall thrust of this project is the evaluation of a low-input legume cover crop-cotton production system to reduce environmental risks and improve profitability.

**Project Coordinator :** C. S. Rothrock, University of Arkansas

**Major Participants :** **University of Arkansas:** R. E. Frans, Weed Scientist, Agronomy Dept.; T. J. Kring, Entomology Dept.; L. D. Parsch, Agric. Econ. and Rural Soc. Dept.; H. D. Scott, Soil Physicist, Agronomy Dept.

**University of Arkansas:** Southwest Arkansas Research and Extension Center, Hope, AR 71801:  
T. L. Kirkpatrick, Plant Pathologist; J. J. Phillips, Agronomist.

**University of Arkansas:** Southeast Arkansas Research and Extension Center, Monticello, AR 71655: J. S. McConnell, Agronomist.

**Clemson University:** Edisto Research and Education Center, Blackville, SC 29817: J. D. Mueller, Plant Pathologist; P. M. Porter, Agronomist; M. J. Sullivan, Entomologist.

**Louisiana State University,** Red River Research Station, Bossier City, LA 71113: P. D. Colyer, Plant Pathologist.

<b>Collaborators:</b>	McCoy Brothers' Farm, Route 11, Box 1 Oswego, SC 29150; Matterson Farms Hwy 108W, Foreman, AR 71836; Brent Brothers' Farm Route 2, Box 212 Lewisville, AR 91845.
<b>Project Duration :</b>	Two years.
<b>Total Funding :</b>	LISA Funds: \$133,000; Matching Funds: \$203,987.







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